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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,462	04/24/2001	Werner Obrecht	Mo-6025/LeA 34,439	5368

157 7590 03/04/2004

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EXAMINER
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HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/841,462	OBRECHT ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on RCE of January 14, 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5-6-03, 1-8-04</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. **Applicant's RCE filed on January 14, 2004 is acknowledged.** The limitation of Claim 1 was further amended to carry "polybutadiene rubber gel having a diameter of 5 to 1000 nm and with a glass transition temperature of  $<-60^{\circ}\text{C}$ ". After a close examination, the examiner has thereby withdrawn the previous 102 and 103 rejections. **Claims 1-7 are pending now.** An action follows.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. *The limitation of parent Claim 1 of the present invention relates to rubber compounds comprising at least one double bond-containing rubber (A) and polybutadiene rubber gel having a diameter of 5 to 1000 nm and with a glass transition temperature of  $<-60^{\circ}\text{C}$  (B), whereby component (B) is present in quantities of 10-150 wt%, relative to the total quantity of component (A), and optionally other fillers and rubber auxiliary substances in conventional quantities. See other limitations of Claims 2-7.*

4. Claims 1-3, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Obrecht et al. (US 5,395,891).

Regarding the limitation of parent **Claim 1**, **Obrecht** et al. disclose mixtures of (A) **polybutadiene gel** and (B) other **rubbers containing C=C double bonds**, wherein the quantity of polybutadiene gel is 1-70 % by weight based on the sum of (A) and (B) which is overlapping the claimed range by conversion (abstract, line 1-4; column 1, line 50-55; also see composition detail in column 5, line 48 – column 6, line 24). Obrecht et al. further disclose that the preparation of polybutadiene gels (as BR gels) by **crosslinking the polybutadiene latex having a particle size of 30-500 nm through in polymerization or after polymerization** (column 2, line 8-9; column 4, line 26 – column 5, line 47; column 5, line 34-44). Some additives such as carbon black, ZnO, and TMTD can be also included as shown in the test mixtures for vulcanization (column 5, line 48 – column 6, line 24).

It is noted that Obrecht does not specifically disclose a Tg temperature for the above-mentioned polybutadiene. However, it is found by examiner that **glass transition temperatures of polybutadiene polymers actually fall in the claimed range of  $<-60^{\circ}\text{C}$** . In the **Aldrich Chemical catalog**, the compound 18137-4 of **cis-polybutadiene** has a Tg of  $-102^{\circ}\text{C}$  and the compound 18138-2 of **cis, trans-polybutadiene** has a Tg of  $-95^{\circ}\text{C}$ . Additionally, the Applicants have admitted the **polybutadiene rubber gels of present application were**

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**prepared according to the procedure of Obrecht** (see statement on page 3 at bottom lines of this RCE amendment). Therefore, all limitations of Claim 1 are anticipated by Obrecht.

5. Regarding **Claim 2**, Obrecht et al. disclose the amount of **polybutadiene gel in the composition is 1-70 %** by weight based on the sum of (A) and (B) as discussed in Claim 1, which is overlapping the claimed range by conversion.

Regarding **Claim 3**, Obrecht et al. disclose that **EPDM, S-SBR, NR and BR are used as component (B)** (column 2, line 51-54).

Regarding **Claim 5**, Obrecht et al. disclose on column 3, lines 44-58, the **silica** which commonly known as anhydrous or hydrated can be included in the rubber composition.

Regarding **Claim 7**, since **polybutadiene latex** is used for crosslinking to gel by Obrecht et al. as component (A), its glass transition temperature thereby sets forth the claimed limitation of Claim 7 as discussed in Claim 1.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obrecht et al. (US 5,395,891) in view of Wolpers et al. (EP 530,590 with English abstract).

The rejection of 102(b) over Obrecht sets forth above for Claim 1 is incorporated here by reference. Regarding the limitation of **Claim 4**, the reference is silent about using 1,6-bis(N,N'-dibenzyl thiocarbamoyl dithio)hexane. Wolpers et al. teach the compound of 1,6-bis(N,N'-dibenzyl thiocarbamoyl dithio)hexane as shown in **Formula (1) is included in diene rubber composition with sulfur, mercapto- and sulfenamide-accelerators** (abstract, line 1-10). The advantage is **such a rubber composition will become vulcanizable so that high aging stability and reversion stability can be obtained** (abstract, line 1-2). Therefore, one having ordinary skill in the art would find it obvious to modify the rubber composition of Obrecht by adding a compound of 1,6-bis(N,N'-dibenzyl thiocarbamoyl dithio)hexane as taught by Wolpers with advantage as **such articles made from such a new composition is expected to have high aging**

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**stability and reversion stability since its vulcanizability is improved** by this specific compound.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obrecht et al. (US 5,395,891) in view of Kondo et al. (US 5,393,816).

The rejection of 102(b) over Obrecht sets forth above for Claim 1 is incorporated here by reference. Regarding the limitation of **Claim 6**, the reference is silent about using **bis(triethoxysilylpropyl) disulfane to activate the silicic acid**. Kondo et al. teach that activator such as **bis(triethoxysilylpropyl) disulfane** can be included in a rubber composition comprising silica (column 4, line 5-68; specifically see line 56). The advantage is that a silane compound such as bis(triethoxysilylpropyl) disulfane can activate the silica and thereby to improve the flowability in molding process (column 4, line 60 – column 5, line 7). Therefore, one having ordinary skill in the art would found it obvious to modify the rubber composition of Obrecht by adding a silane compound of bis(triethoxysilylpropyl) disulfane to activate silica as taught by Kondo with advantage as **such articles made from such a new composition is expected to have high flowability in the course of molding process, thereby to obtain a practical process as well as a better product.**

### *Conclusion*

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9. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to rubber compounds comprising a double bond-containing rubber and a polybutadiene rubber gel:

US Patent No. **4,824,908 to Tsutsumi et al.** disclose a butadiene-based rubber composition reinforced with fillers for vulcanization in tire applications (abstract, line 1-20). A **butadiene-based homopolymer or copolymer having a glass transition temperature of not less than  $-105^{\circ}\text{C}$  is used** (abstract, line 1-10; column 2, line 25 – column 3, line 42). **Other rubber such as natural rubber can be included together** (column 5, line 28-51). However, **no claimed polybutadiene rubber gel is disclosed**. Therefore, Tsutsumi fails to teach or fairly suggest the limitations of present application.

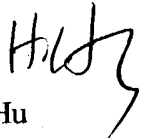
10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM – 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

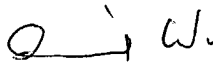


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Henry S. Hu

February 20, 2004

  
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